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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,395	12/21/2001	David V. Tsu	2072	1025

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EXAMINER	
AGUSTIN, PETER VINCENT	

ART UNIT	PAPER NUMBER
2652	

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,395	TSU, DAVID V.	
	Examiner	Art Unit	
	Peter Vincent Agustin	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 April 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Replacement drawings were received on April 4, 2005. These drawings are unacceptable because they constitute new matter. As noted in the Office Action mailed October 6, 2004, the drawings must show every feature of the invention specified in the claims. Therefore, the method steps of claim 26 must be shown or **the feature(s) canceled from the claim(s). No new matter should be entered.**

Specification

2. The amendment filed April 4, 2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: insertion of new paragraphs into the specification (see page 3, last paragraph and page 5 last paragraph); inclusion of additional text (see page 4, paragraph 1); addition of elements in Figure 1; and addition of new Figure 3.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 26, 27, 31-34 & 38-42 are rejected under 35 U.S.C. 102(e) as being anticipated by O'Neill et al. (hereafter O'Neill) (US 6,775,218).

In regard to claim 26, O'Neill discloses a method of recording information to an optical recording medium comprising a phase change material (abstract, lines 1-2), said method comprising the steps of: applying energy having a spatial profile to said phase change material (column 6, lines 31-33), said spatial profile defining a region of spatial overlap (figure 3A, element 301) of said energy with said phase change material (column 7, lines 16-20), said energy providing a temperature profile (figure 2) within said region of spatial overlap (column 6, lines 15-17), said temperature profile defining a spatial distribution of temperatures (temperatures above and below Tm or Tg), said spatial distribution including temperatures (temperatures above Tm) sufficient to permit formation of an amorphous phase in said region of spatial overlap; forming a mark (figure 3A, element 301) coinciding with the portions of said spatial distribution having a temperature sufficient to form an amorphous phase, said mark comprising an amorphous phase, said amorphous phase forming upon cooling of said region of spatial overlap (column 7, lines 3-7), said cooling releasing energy in excess of the energy required to form said amorphous phase (note that during forming of an amorphous state (temperatures above Tm), energy is absorbed, on the other hand, during cooling, energy is released); dissipating said excess energy to portions of said phase change material outside (figure 3A, element 302) of the spatial region coinciding with said mark (301), said dissipating occurring at a rate sufficient to prevent formation of an amorphous phase in said portions outside of said mark (see column 7, lines 3-14: note that "forming crystalline material in the annular region" corresponds to the claimed "prevent formation of an amorphous phase in said portions outside of said mark").

In regard to claim 27, O'Neill discloses that said energy is applied in the form of an energy pulse (column 6, line 67; see also column 17, line 39).

In regard to claim 31, O'Neill discloses that said energy is applied in the form of a plurality of energy pulses (column 17, lines 39 & 46).

In regard to claim 32, O'Neill discloses that said energy is applied with a laser (abstract line 4).

In regard to claim 33, O'Neill discloses that said spatial profile is uniform (column 6, lines 52-54: "circular symmetry").

In regard to claim 34, O'Neill discloses that said spatial profile is a Gaussian profile (column 6, lines 50-52).

In regard to claim 38, O'Neill inherently discloses that said temperature profile is uniform. Column 6, lines 33 suggest that temperature is a function of laser energy. Since the laser energy is uniform (column 6, lines 52-54: "circular symmetry"), then it follows that the temperature profile is also uniform.

In regard to claim 39, O'Neill discloses that said mark coincides with said region of spatial overlap (as shown in figure 3A, element 301).

In regard to claim 40, O'Neill discloses that said mark provides for more than two recording levels (column 4, lines 3-4).

In regard to claims 41 & 42, O'Neill discloses that said cooling/dissipating step comprises capacitive cooling (column 5, line 19: "cools rapidly").

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill in view of Udagawa et al. (hereafter Udagawa) (US 5,513,167).

For a description of O'Neill, see the rejection above. However, in regard to claim 28, O'Neill is silent to whether said energy pulse has a pulse duration of less than 14 nanoseconds. Furthermore, in regard to claims 29 & 30, O'Neill is silent to whether said energy pulse has a pulse duration of less than 10 nanoseconds or 7 nanoseconds.

Udagawa discloses energy pulses having a pulse durations less than 14 nanoseconds (column 6, lines 12-20). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have provided a pulse duration of less than 14 nanoseconds to the energy pulse of O'Neill as suggested by Udagawa, the motivation being to decrease the pulse width in order to prevent a heat of a preceding signal from interfering with a succeeding signal (column 6, lines 12-20), thereby preventing recording error.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have used a pulse width less than 10 or 7 nanoseconds because applicant has not disclosed that a pulse width less than 10 or 7 nanoseconds provides an advantage, is used for a particular purpose, or solves a stated problem, and one of ordinary skill in the art would have expected the applicant's invention to perform equally well with either the pulse width less than

14 nanoseconds taught by Udagawa or the claimed pulse width less than 10 or 7 nanoseconds because all these ranges perform the same function of decreasing the pulse width in order to prevent a heat of a preceding signal from interfering with a succeeding signal (column 6, lines 12-20). Furthermore, choosing pulse width values less than 10 or 7 nanoseconds would have been an obvious matter of design choice.

7. Claims 35 & 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill in view of Ovshinsky (US 3,530,441).

For a description of O'Neill see the rejection above. However, in regard to claim 35, O'Neill does not explicitly disclose that said phase change material comprises a chalcogenide. Furthermore, in regard to claim 36, O'Neill does not explicitly disclose that said phase change material comprises an element selected from the group consisting of Ge, Sb, Se, In, Ag and Te.

Ovshinsky discloses a phase change material comprising a chalcogenide (column 10, line 22) or Ge, Sb, Se or Te (column 10, lines 20-28). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have used chalcogenide or Ge, Sb, Se or Te for the phase change material of O'Neill as suggested by Ovshinsky, the motivation being to improve cyclability of data recording and erasing operations (see also Nonoyama et al. (US 5,646,924): column 1, lines 35-53).

8. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill in view of McDonald et al. (hereafter McDonald) (US 6,563,779).

For a description of O'Neill, see the rejection above. However, O'Neill does not explicitly disclose that said region of spatial overlap is substantially cylindrical.

McDonald discloses an optical disc having a cylindrical region where a laser beam is reflected (column 3, lines 50-65). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have provided a cylindrical shape to the region of spatial overlap of O'Neill as suggested by McDonald, the motivation being to obtain a recording medium having a higher storage density.

Response to Arguments

9. Applicant's arguments filed April 4, 2005 have been fully considered but they are not persuasive.

a. The Applicant notes on page 12, paragraph 2 that "the region of spatial overlap is represented by element 302 of fig. 3A, not element 301 as indicated in the Office Action". The Examiner disagrees. The Examiner interprets "the region of spatial overlap" as the region within element 302 where an amorphous mark is formed, which is shown by the shaded area labeled 301.

b. The Applicant argues on page 12, paragraph 3 that "O'Neill fails to teach the formation of a mark that coincides with those portions of the spatial distribution of energy having a temperature sufficient to form an amorphous state". The Examiner disagrees. Figure 3A, for example, shows "formation of a mark"; this mark "coincides with those portions of the spatial distribution of energy", see column 6, lines 31-39; and this energy has "a temperature sufficient to form an amorphous state", Figure 2, temperatures above Tm.

c. The Applicant notes: on page 12, last paragraph that "O'Neill fails to teach the relationship between the boundaries of the amorphous mark 301 in the cooled state and

the boundaries of the melted portion of the phase change material in the heated state"; on page 13, paragraph 2 that O'Neill "fails to teach that the boundaries of the initially melted region coincide with the boundaries of the mark 301 formed upon cooling"; and on page 13, last paragraph that "O'Neill fails to teach a relationship between the boundaries of its melted portion...and its mark". It should be noted, however, that these noted features are not commensurate with the claimed language.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

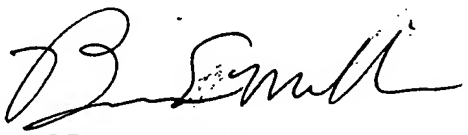
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent Agustin whose telephone number is 571-272-7567. The examiner can normally be reached on Monday-Friday 9:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Peter Vincent Agustin
Art Unit 2652



BRIAN E. MILLER
PRIMARY EXAMINER